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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,947	01/09/2002	Stephen I. McTaggart	87742.0003	5148

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EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2685	4

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/040,947	Applicant(s) STEPHEN MCTAGGART	
	Examiner Blane J Jackson	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The phrase "at least about 5 feet" in claims 1 and 14, the phase "less than about" in claims 7, 14, 18, and 20 are relative phrases which render the claims indefinite. These phrases are not defined by the respective claims, the specification does not provide a standard for ascertaining the requisite degree,

and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Reference MPEP 2173.05(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (U.S. Patent 6,594,370) with a view to Gelber (U.S. Patent 5,410,746).

As to claims 1, 3, 4, 5, 7-9, 18 and 20, Anderson teaches a wearable radio configured to be used as a necklace comprising:

A flexible laminate capable of at least partially encircling the neck (or waist) of a user (figure 2, column 2, lines 51-66),

The flexible laminate bearing thereon a radio circuit and a printed antenna,

A printed power source effective to power the radio circuit (column 4, lines 56-58),

An earphone connected to the radio circuit (wireless earphone, column 4, lines 20-44).

Anderson teaches the necklace may contain other printed circuits including a pager, cell phone and associated antennas but does not teach a wearable radio configured to be used with a hat.

Gelber teaches a wearable radio, preferably an AM/FM radio, attached to a hat that includes a suitable antenna, a power source effective to power the radio circuit and an earphone connected to the radio circuit (figure 1, column 2, lines 48-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the communication system of Anderson to be worn in the manner of Gelber as an alternative convenient and portable means to carry and use radio equipment.

Anderson modified does not specifically teach the printed antenna being configured on the laminate to have a length of at least about 5 feet and an area of less than about 14 cm square area per foot length of the antenna. However, Anderson teaches the receiver utilizes the necessary printed antennas by application determined by frequency and adjusted for size to meet a form factor and required electrical performance (column 5, lines 30-45). Given an operating frequency in the Ghz, Anderson suggests a bow, patch, an array, rectangular or other known elements (column 4, line 62 to column 5, line 14). By simple approximation, it is well known in the art that the resonant half wavelength of a FM radio antenna in air is approximately 5 feet in air but considerably smaller if configured as a rectangle or spiral on a material with a dielectric constant greater than air to fit the available print area. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize the antenna

for the FM or similar radio of Anderson modified to be of the appropriate form factor to fit the wearable form and meet the required electrical performance size as taught by Anderson to perform efficiently.

As to claim 2 and 19, Gelber of Anderson modified teaches a radio receiver that may be an AM/FM radio (column 2, lines 10-16, column 3, lines 18-35) but does not specifically teach the radio circuit is limited to receiving a single frequency. However, since Gelber teaches the idea of a portable cap and radio combination, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure the system of Anderson modified and limit the radio capability for a particular outdoor sponsored event.

As to claim 6, Gelber of Anderson modified teaches a cap and radio where the earphone are positioned to extend below an ear section of the hat (figure 1, column 3, line 58 to column 4, line 4).

4. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (U.S. Patent 6,594,370) and Gelber (U.S. Patent 5,410,746) and further in view of Veazey (U.S. Patent 6,101,632).

As to claims 10 and 21, Anderson teaches the laminate includes a printed rechargeable battery (column 4, lines 56-58) but does not teach a power source includes at least a solar cell positioned at one of a top of the hat and a lip of the hat.

Veazey teaches a foldable protective hat that includes reflective material to reflect light and or radar waves, strobe lights, a radio and other distress signaling means where the battery power source can be recharged by solar cell material mounted to the top of the hat (figure 2, solar cell material (19), column 3, lines 12-24 and column 4, lines 5-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modifiy Anderson modified with the additional solar cell material as taught by Veazey to recharge the rechargeable batteries.

5. Claims 11, 12, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (U.S. Patent 6,594,370) and Gelber (U.S. Patent 5,410,746) and further in view of Isen et al. (U.S. Patent 5,763,058).

As to claims 11, 12, 22 and 23, Anderson teaches a radio circuit with elastomeric pushbutton switches and rechargeable batteries printed on a flexible substrate (column 3, lines 29-63) but does not specifically teach the radio circuit includes at lest one printed resistor and one printed capacitor.

Isen teaches a method where an electrical circuit including switches, resistors, capacitors and batteries are formed of a conductive liquid printed directly onto a flexible substrate (figure 8, substrate (53), capacitor (804, 806, 802), resistor (R1) and battery (820, 818, 816), column 11, line 44 to column 12, line 25). It would have been obvious to one of ordinary skill in the art at the time of the invention to realize in the configuration of the radio of Gelber modified the specific methods to form circuit components as taught by Isen to produce highly

detailed customized electrical circuits using high speed mass production printing techniques at a fraction of the cost as compared to conventional printed circuit board technology.

6. Claims 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (U.S. Patent 6,594,370) with a view to Isen et al. (U.S. Patent 5,763,058).

As to claim 14, Anderson teaches a wearable radio comprising:

A printed antenna printed on a flexible substrate (column 3, lines 43-52),

A printed power source printed on the flexible substrate (column 4, lines 41-58),

A radio circuitry on the flexible substrate, the radio circuitry including a printed circuit pattern that connects the printed antenna, printed power source and circuit elements of the radio circuitry (figures 1 and 2, column 3, lines 29-52), and,

A speaker element connected to the radio circuitry (a wireless remote earpiece (column 4, lines 20-28),

Anderson teaches a power source, switches, radio circuit and antenna printed on a flexible substrate but does not specifically teach a the radio elements are printed on a flexible sheet of paper.

Isen teaches a method to print a radio elements formed of a conductive liquid printed directly onto one side of a rigid or flexible substrate (figure 8, column 11, lines 44-67) where the flexible substrate comprises a flexible

aluminum foil, polymeric materials, laminations, cloth, wool and paper (column 10, lines 39-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the wearable radio system of Anderson to be form on any variety of flexible substrates as taught by Isen to accommodate the wear ability of the device by the user.

Anderson modified does not specifically teach the printed antenna being configured on the flexible paper to have a length of at least about 5 feet and an area of less than about 14 cm (squared) per foot length of the antenna. However, Anderson teaches the receiver utilizes the necessary printed antennas by application determined by frequency and adjusted for size to meet a form factor and required electrical performance (column 5, lines 30-45). Operating at a microwave frequency, Anderson suggests a bow, patch, an array, rectangular or other known elements (column 4, line 62 to column 5, line 14) to fit a relatively small area. By simple approximation, it is well known in the art that the resonant half wavelength of a FM radio antenna in air is approximately 5 feet in air but considerably smaller if configured as a rectangle or spiral on a material with a dielectric constant greater than air to fit the available print area. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize the antenna for the FM or similar radio of Gelber modified to be of the appropriate form factor to fit the wearable form and meet the required electrical performance size as taught by Anderson to perform efficiently.

As to claims 15-17, Anderson teaches a necklace that includes a variety of radio equipment or a hearing aid system with a wireless connection between the necklace printed radio equipment and earpiece (column 3, line 43 to column 4, line 5) but does not specifically teach the radio circuit is limited to receiving a single frequency. However, since Anderson teaches the idea of radio communication and hearing aid system, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure the system of Anderson modified and limit the radio capability for a particular outdoor sponsored event.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ferguson et al. (U.S. Patent 6,496,382) discloses the circuits and inductive coil mounted on a flexible substrate comprising a radio frequency identification tag. Vernon (U.S. Patent 6,252,550) discloses a planar antenna fabricated on a flexible substrate. Oberle (U.S. Patent 6,476,775) discloses a method for forming a radio frequency antenna. Shinoda et al. (U.S. Patent 4,833,726) discloses a helmet with two-way radio communication faculty. Rappaport et al. (U.S. Patent 4,727,599) discloses a waterproof headband with built in radio.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is

(703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quochien B. Vuong 4/19/04

BJJ

QUOCHIEN B. VUONG
PRIMARY EXAMINER